

There are provided an inexpensive arithmetic decoding method and device that can process both of binary image data and multi-level image data, and a storage medium storing a program for executing the arithmetic decoding method. An arithmetic decoding device that decodes arithmetically encoded image data formed of at least one bitplane includes four predicted state memories that can be accessed separately, and an arithmetic operation section. When 4-bit image data is to be decoded, four complete sets of pairs of a more probable symbol and a state value or a probability estimate corresponding to pixels of four bitplanes of the 4-bit image data are stored in respective corresponding ones of the four predicted state memories. When less than 4-bit image data is to be decoded, a complete set of pairs of the more probable symbol and the state value or the probability estimate corresponding to pixels of each bitplane of the less than 4-bit image data are allocated to and stored in at least part of the four predicted state memories. Ones of the pairs of the more probable symbol and the state value or the probability estimate, which correspond to the pixels, respectively, are sequentially read from the four predicted state memories. The pixels are sequentially decoded based on the sequentially read

pairs of the more probable symbol and the state value
or the probability estimate.

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